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(71)出願人　000170598
株式会社アルファ
神奈川県横浜市金沢区福浦１丁目６番８号
(72)発明者　臼井　俊之
神奈川県横浜市金沢区福浦１－６－８　株式会社アルファ内
(74)代理人　100083806
弁理士　三好　秀和　（外８名）

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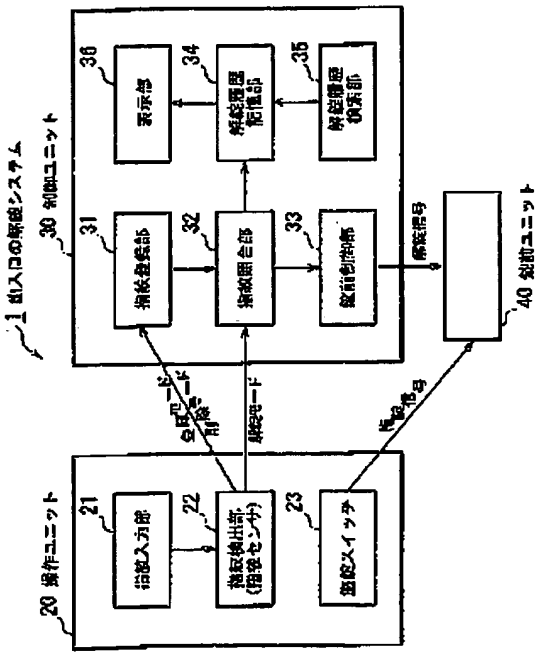
(54)【発明の名称】　出入口の解錠方法および出入口の解錠システム

(57)【要約】　（修正有）
【課題】　コピーされる虞のある鍵を使用せず、本人でなければ解錠することができなくて、そのうえ、限られたメモリ容量にドアロックの解錠履歴を大量に保存する。
【解決手段】　出入口に設けられたドアの外方に配置した指紋入力部２１に入力される指紋データを検出し、検出した指紋データをあらかじめ登録してある指紋データと照合する。検出指紋データが登録指紋データと一致したことを確認すると、解錠信号を出力してドアロックを解錠する。これと同時に、解錠した登録指紋データの識別コードを保存する。



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【特許請求の範囲】

【請求項１】　出入口に設けられたドアロックを解錠する方法であって．

ドアの外方に配置した指紋入力部に入力される指紋データを検出し，

検出した前記指紋データを．あらかじめ識別コードとともに登録してある指紋データと照合し．

前記検出指紋データが前記登録指紋データと一致したことを確認すると．解錠信号を出力してドアロックを解錠し．

前記解錠した登録指紋データの前記識別コードを保存する．ことを特徴とする出入口の解錠方法。

【請求項２】　前記登録指紋データとして複数の指紋データが、各指紋データに比べてデータ量がはるかに少ない識別コードによってそれぞれ識別可能に登録してあり．

前記検出指紋データが前記複数の登録指紋データのいずれか１つと一致したとき．解錠信号を出力してドアロックを解錠するとともに、当該一致した１つの登録指紋データの前記識別コードを保存する、ことを特徴とする請求項１記載の出入口の解錠方法。

【請求項３】　出入口に設けられたドアロックを解錠するシステムであって、

ドアの外方に配置され、指紋入力部に入力される指紋データを検出する指紋検出手段と、

前記指紋検出手段が検出した指紋データを、あらかじめ識別コードとともに登録してある指紋データと照合する指紋照合手段と．

前記指紋照合手段が前記検出指紋データと前記登録指紋データとが一致したことを確認したとき、解錠信号を出力してドアロックを解錠する錠前制御手段と、

前記錠前制御手段が解錠した登録指紋データの前記識別コードを保存する解錠履歴記憶手段と．を備えていることを特徴とする出入口の解錠システム。

【請求項４】　前記指紋照合手段が検出指紋データと照合する登録指紋データとして、複数の指紋データを、各指紋データに比べてデータ量がはるかに少ない識別コードによってそれぞれ識別可能に登録してあり、

前記指紋照合手段が前記検出指紋データと前記登録指紋データのいずれか１つとの一致を確認して、前記錠前制御手段がドアロックを解錠したとき．前記解錠履歴記憶手段が、当該一致した１つの登録指紋データの前記識別コードを保存する、ことを特徴とする請求項３記載の出入口の解錠システム。

【請求項５】　前記指紋検出手段はドアの外側に取り付けられ、前記指紋照合手段．前記錠前制御手段および前記解錠履歴記憶手段は、ドアの内側に取り付けられることを特徴とする請求項３記載の出入口の解錠システム。

【発明の詳細な説明】

【０００１】

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【発明の属する技術分野】この発明は．例えば建物の出入口に適用される出入口の解錠方法と．出入口の解錠システムに関するものである。

【０００２】

【従来の技術】一般に、建物の出入口にあるドアロックを解錠するには．戸建住宅であれ、マンション等の集合住宅であれ、鍵を使用するのが普通であり、また．建物内の各部の出入口にあるドアロックを解錠するにも、一般に鍵が使用されている。

【０００３】

【発明が解決しようとする課題】しかしながら．このような従来使用されている鍵は、紛失しやすいうえ．簡単にコピーできるため、いつでもどこでも身に付けていない限り、本人が知らない間にコピーされて不正使用される可能性を否定することができない。すなわち．鍵を使ってドアロックが解錠されたとしても．それが本人によるものであるのか、あるいは、コピーされた鍵の不正使用によるものであるのか．不明であるという問題があった。

【０００４】この発明の課題は、上記従来のもののもつ問題点を排除して、出入口に設けられたドアロックを解錠するのに、従来のようなコピーされる虞のある鍵を使用せず、本人でなければ解錠することができなくて、そのうえ、限られたメモリ容量にドアロックの解錠履歴を大量に保存することのできる出入口の解錠方法および出入口の解錠システムを提供することにある。

【０００５】

【課題を解決するための手段】この発明は上記課題を解決するものであって、請求項１に係る発明は、出入口に設けられたドアロックを解錠する方法であって．ドアの外方に配置した指紋入力部に入力される指紋データを検出し．検出した前記指紋データを、あらかじめ識別コードとともに登録してある指紋データと照合し、前記検出指紋データが前記登録指紋データと一致したことを確認すると、解錠信号を出力してドアロックを解錠し．前記解錠した登録指紋データの前記識別コードを保存する出入口の解錠方法である。

【０００６】請求項２に係る発明は．請求項１記載の発明において、前記登録指紋データとして複数の指紋データが．各指紋データに比べてデータ量がはるかに少ない識別コードによってそれぞれ識別可能に登録してあり、前記検出指紋データが前記複数の登録指紋データのいずれか１つと一致したとき．解錠信号を出力してドアロックを解錠するとともに、当該一致した１つの登録指紋データの前記識別コードを保存する出入口の解錠方法である。

【０００７】請求項３に係る発明は．出入口に設けられたドアロックを解錠するシステムであって、ドアの外方に配置され、指紋入力部に入力される指紋データを検出する指紋検出手段と、前記指紋検出手段が検出した指紋

データを、あらかじめ識別コードとともに登録してある指紋データと照合する指紋照合手段と、前記指紋照合手段が前記検出指紋データと前記登録指紋データとが一致したことを確認したとき、解錠信号を出力してドアロックを解錠する錠前制御手段と、前記錠前制御手段が解錠した登録指紋データの前記識別コードを保存する解錠履歴記憶手段とを備えている出入口の解錠システムである。

【０００８】請求項４に係る発明は、請求項３記載の発明において、前記指紋照合手段が検出指紋データと照合する登録指紋データとして、複数の指紋データを、各指紋データに比べてデータ量がはるかに少ない識別コードによってそれぞれ識別可能に登録してあり、前記指紋照合手段が前記検出指紋データと前記登録指紋データのいずれか１つとの一致を確認して、前記錠前制御手段がドアロックを解錠したとき、前記解錠履歴記憶手段が、当該一致した１つの登録指紋データの前記識別コードを保存する出入口の解錠システムである。

【０００９】請求項５に係る発明は、請求項３記載の発明において、前記指紋検出手段はドアの外側に取り付けられ、前記指紋照合手段、前記錠前制御手段および前記解錠履歴記憶手段は、ドアの内側に取り付けられる出入口の解錠システムである。

【００１０】

【発明の実施の形態】この発明の実施の形態を、図面を参照して説明する。図１は、この発明による出入口の解錠システムの一実施の形態を示す構成図であり、この出入口の解錠システム１は、建物の出入口１０に設けられたドア１１の外側１２に取り付けられる操作ユニット２０と、ドア１１の内側１３に取り付けられる制御ユニット３０と、ドア１１の内側１３に操作ノブ４１を備えた錠前ユニット４０とで構成されている。１５はドア１１の両側に取り付けられたドアハンドルである。

【００１１】図２は、出入口の解錠システム１のブロック図であり、操作ユニット２０は、指紋入力部２１、指紋検出部（指紋センサ）２２および施錠スイッチ２３を備え、また、制御ユニット３０は、指紋登録部３１、指紋照合部３２、錠前制御部３３、解錠履歴記憶部３４、解錠履歴検索部３５および表示部３６を備えている。また、図示してないが、操作ユニット２０の各部、制御ユニット３０の各部、および錠前ユニット４０には、電池または適宜のＤＣ電源から必要な電力が供給されるようになっている。

【００１２】図３に示すように、操作ユニット２０は、カバー２４を開けると、指紋入力部２１の指紋入力面２５が現れるようになっている。そして、指紋入力面２５に指を当てて軽く押すと指紋入力部２１のスイッチが入り、入力された指紋データを指紋検出部（指紋センサ）２２が検出すると、検出した指紋データを制御ユニット３０の指紋照合部３２に伝えるようになっている。

【００１３】また、操作ユニット２０は、施錠スイッチ２３が押されると、施錠信号を錠前ユニット４０に伝えるようになっていて、それにより、解錠状態にある場合は錠前ユニット４０が電動で施錠するようになっている。

【００１４】制御ユニット３０は、通常の状態では、指紋データ入力による解錠動作モードにあるが、適宜の操作によって、指紋データの登録／削除動作モードに切り換えられるようになっている。すなわち、指紋データの登録／削除動作モードの場合、操作ユニット２０で検出した指紋データが指紋検出部（指紋センサ）２２から指紋登録部３１に伝えられると、その指紋データを識別コードとともに指紋登録部３１に登録し、また、任意の識別コードが指定されて削除の操作がなされると、その識別コードに対応した指紋データを識別コードとともに削除するようになっている。

【００１５】また、制御ユニット３０は、通常の指紋データ入力による解錠動作モードにあるとき、操作ユニット２０で検出した指紋データが指紋検出部（指紋センサ）２２から指紋照合部３２に伝えられると、その指紋データを、指紋登録部３１にあらかじめ登録してある指紋データと照合し、登録指紋データが複数ある場合は１つずつ順番に照合する。そして、検出指紋データが登録指紋データ（のいずれか１つ）と一致すると、指紋照合部３２が一致信号を錠前制御部３３に伝え、それにより、錠前制御部３３が解錠信号を錠前ユニット４０に伝えて、電動で解錠させるようになっている。

【００１６】また、制御ユニット３０は、検出指紋データが登録指紋データ（のいずれか１つ）と一致したとき、指紋照合部３２が、その一致した登録指紋データの識別コードを解錠履歴記憶部３４に伝えて記憶させるようになっている。

【００１７】ここで、指紋登録部３１に指紋データとともに識別コードを登録しておく理由は、解錠履歴記憶部３４のメモリ容量をいたずらに増やすことなく、大量の解錠履歴を保存しておくためである。すなわち、指紋データは一般にデータ量が比較的多いのに対し、例えば番号（１０進符号）等の適宜の識別コードは、指紋データに比べてデータ量がはるかに少ない。そのため、例えば、識別コードを用いずに指紋データを１０種類登録しておき、１００回、１０００回の解錠履歴をすべて指紋データで保存する場合、解錠履歴記憶部３４のメモリ容量は、指紋登録部３１のメモリ容量の１０倍、１００倍必要となる。

【００１８】これに対し、１０種類の指紋データをその識別コードとともに登録しておくには、指紋登録部３１のメモリ容量をわずかに増やさなければならないが、１００回、１０００回の解錠履歴をすべて識別コードで保存するのに必要な解錠履歴記憶部３４のメモリ容量は、指紋登録部３１のメモリ容量に比べてずっと少なくて済

む。そのため、解錠履歴記憶部３４として限られたメモリ容量のものを用いても、１００回、１０００回に上る大量の解錠履歴を保存しておくことが可能である。

【００１９】そして、解錠履歴記憶部３４に記憶した識別コードは、解錠履歴検索部３５により検索することで表示部３６に表示されるため、例えば、時期を特定して解錠履歴検索部３５により検索することで、特定の時期に解錠したのが誰の指紋データであったのかを、過去に遡って確認することができるようになっている。そのため、大勢の人が１日に何回もドアロックを解錠するような出入口１０に適用する解錠システムとして、好適なものである。

【００２０】さらに、錠前ユニット４０は、ドア１１の内側１３からは、操作ノブ４１を回すことで施錠／解錠することができるようになっている。

【００２１】次に、上記の実施の形態の作用について、図４に示すフローチャートを用いて説明する。

【００２２】ドア１１の外側１２にいてドアロックを解錠する場合、まず、操作ユニット２０のカバー２４を開け、指紋入力面２５に指を乗せて指紋データを入力すると、指紋入力部２１に入力された指紋データを指紋検出部（指紋センサ）２２が検出する（ステップＳ１）。

【００２３】すると、検出した指紋データが指紋検出部（指紋センサ）２２から制御ユニット３０の指紋照合部３２に伝えられて、指紋照合部３２がその指紋データを、指紋登録部３１にあらかじめ登録してある指紋データと照合する（ステップＳ２）。

【００２４】検出指紋データが登録指紋データ（のいずれか１つ）と一致すると（ステップＳ３のＹＥＳ）、錠前制御部３３から解錠信号を受けて、錠前ユニット４０がドアロックを電動で解錠させる（ステップＳ４）。このとき、例えば適宜のブザー音が鳴ることで、解錠したことを知らせることが好ましい。

【００２５】一方、検出指紋データが登録指紋データと一致しない場合は（ステップＳ３のＮＯ）、設定回数（例えば３回）まで指紋データの再入力を行わせる（ステップＳ５）。このとき、例えば適宜の警報ブザー音が鳴ることで、指紋データを再入力すべきことを知らせることが好ましい。

【００２６】また、錠前ユニット４０がドアロックを電動で解錠させたとき（ステップＳ４）、同時に、指紋照合部３２が、一致した登録指紋データの識別コードを解錠履歴記憶部３４に伝えて記憶させる（ステップＳ６）。そのため、解錠履歴記憶部３４に記憶した識別コードを、例えば、時期を特定して解錠履歴検索部３５により検索することで、特定の時期に解錠したのが誰の指紋データであったのかを、過去に遡って確認することができる。そのため、大勢の人が１日に何回もドアロックを解錠するような出入口１０に適している。

【００２７】なお、上記の実施の形態では、建物の出入口１０に設けられたドア１１を対象として説明したが、これに限定するものでなく、例えば、建物内の各部の出入口に設けられたドアまたは類似の構造物を対象とすることも可能である。

【００２８】

【発明の効果】この発明は以上のように、出入口に設けられたドアの外方に配置した指紋入力部に入力される指紋データを検出し、検出した前記指紋データを、あらかじめ識別コードとともに登録してある指紋データと照合し、前記検出指紋データが前記登録指紋データと一致したことを確認すると、解錠信号を出力してドアロックを解錠し、前記解錠した登録指紋データの前記識別コードを保存するように構成したので、出入口に設けられたドアロックを解錠するのに、従来のようなコピーされる虞のある鍵を使用せず、本人でなければ解錠することができなくて、そのうえ、限られたメモリ容量にドアロックの解錠履歴を大量に保存することができ、したがって、大勢の人が１日に何回もドアロックを解錠するような出入口に適用して、特定の時期に解錠したのが誰の指紋データであったのかを、過去に遡って確認することができる効果がある。

【図面の簡単な説明】

【図１】出入口の解錠システムの一実施の形態を示す構成図であり、（ａ）はドアの外側から見た構成図、（ｂ）はドアの端面から見た構成図、（ｃ）はドアの内側から見た構成図である。

【図２】出入口の解錠システムの一実施の形態を示すブロック図である。

【図３】操作ユニットの斜視説明図である。

【図４】図２のものの動作を示すフローチャートである。

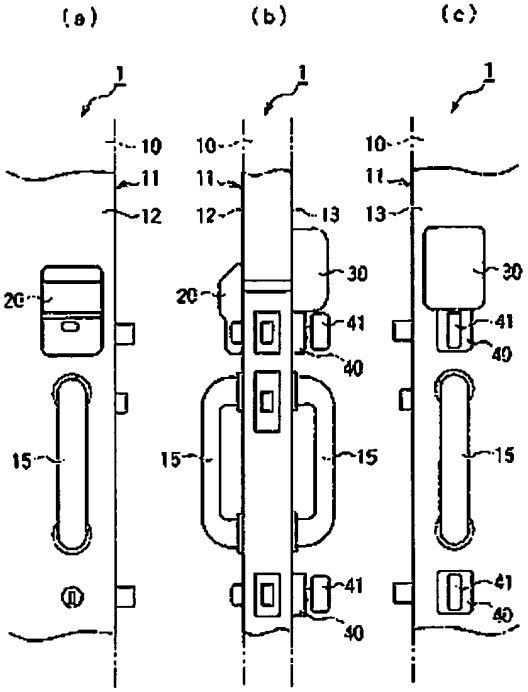
【符号の説明】

１　出入口の解錠システム
１０　建物の出入口
１１　ドア
１２　外側
１３　内側
１５　ドアハンドル
２０　操作ユニット
２１　指紋入力部
２２　指紋検出部（指紋センサ）
２３　施錠スイッチ
２４　カバー
２５　指紋入力面
３０　制御ユニット
３１　指紋登録部
３２　指紋照合部
３３　錠前制御部
３４　解錠履歴記憶部
３５　解錠履歴検索部

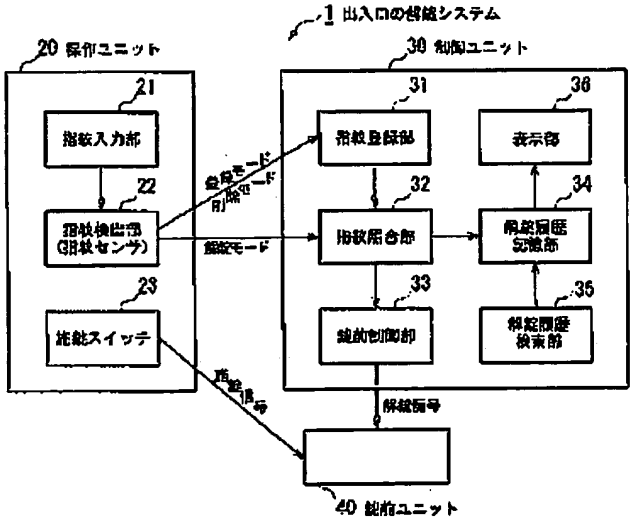
7　　8

３６　表示部
４０　錠前ユニット
＊４１　操作ノブ

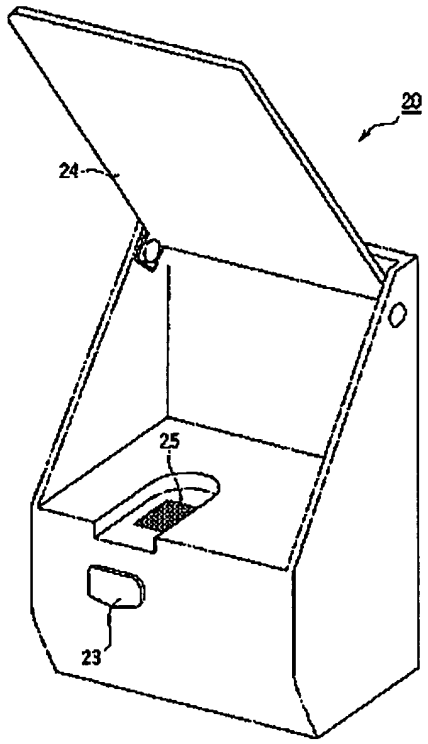
【図１】



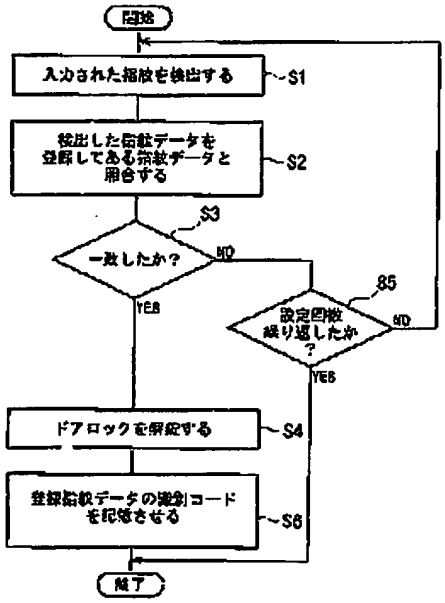
【図２】



【図３】



【図４】



PATENT ABSTRACTS OF JAPAN

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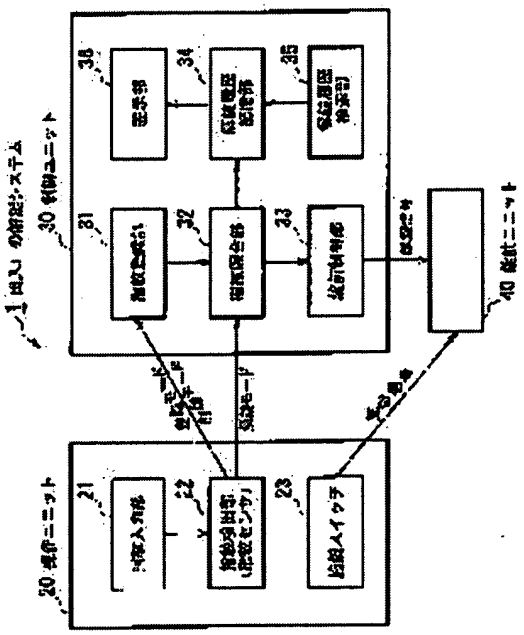
(22)Date of filing : 31.08.2000

(71)Applicant : ALPHA CORP
(72)Inventor : USUI TOSHIYUKI

(54) UNLOCKING METHOD AND SYSTEM FOR DOORWAY

(57)Abstract:
PROBLEM TO BE SOLVED: To allow only a person concerned to unlock without using a key having the fear of being copied, and to store a large quantity of unlocking history of door lock in a limited memory capacity.
SOLUTION: The fingerprint data inputted to a fingerprint input part 21 arranged out of a door 11 provided in an entrance 10 is detected, and the detected fingerprint data is collated with a preliminarily registered fingerprint data. When the detected fingerprint data coincides with the registered fingerprint data, an unlocking signal is outputted to unlock the door. Simultaneously with it, the identification code of the unlocked registered fingerprint data is also stored.



LEGAL STATUS

[Date of request for examination] 31.08.2004

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[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]
[Claim 1] Are the approach of unlocking the door lock prepared in the gate, and the fingerprint data inputted into the fingerprint input section arranged to the way outside a door are detected. If it checks that collated said detected fingerprint data with the fingerprint data beforehand registered with identification code, and said detection fingerprint data have been in agreement with said registration fingerprint data The release approach of the gate characterized by what a release signal is outputted, a door lock is unlocked and said identification code of said registration fingerprint data which unlocked is saved for.
[Claim 2] Compared with each fingerprint data, the amount of data is registered for two or more fingerprint data identifiable by little [far] identification code, respectively as said registration fingerprint data. The release approach of the gate according to claim 1 characterized by what said identification code of the one congruous registration fingerprint data concerned is saved for while outputting a release signal and unlocking a door lock, when said detection fingerprint data are in agreement with any one of said two or more of the registration fingerprint data.
[Claim 3] A fingerprint detection means to detect the fingerprint data which are the system which unlocks the door lock prepared in the gate, are arranged outside a door at a way, and are inputted into the fingerprint input section, A fingerprint authentication means to collate the fingerprint data which said fingerprint detection means detected with the fingerprint data beforehand registered with identification code, When it checks that said fingerprint authentication means of said registration fingerprint data [said detection fingerprint data and] had corresponded, The release system of the gate characterized by having the lock control means which outputs a release signal and unlocks a door lock, and a release hysteresis storage means to save said identification code of the registration fingerprint data which said lock control means unlocked.
[Claim 4] As registration fingerprint data which said fingerprint authentication means collates with detection fingerprint data Compared with each fingerprint data, the amount of data has registered two or more fingerprint data identifiable by little [far] identification code, respectively. When said fingerprint authentication means checks coincidence with any one of said detection fingerprint data and said the registration fingerprint data and said lock control means unlocks a door lock, The release system of the gate according to claim 3 where said release hysteresis storage means is characterized by what said identification code of the one congruous registration fingerprint data concerned is saved for.
[Claim 5] It is the release system of the gate according to claim 3 characterized by attaching said fingerprint detection means in the outside of a door, and attaching said fingerprint authentication means, said lock control means, and said release hysteresis storage means inside a door.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the release approach of the gate applied to the gate of a building, and the release system of a gate.
[0002]
[Description of the Prior Art] for unlocking the door lock at the gate of a building generally -- a single house -- be -- apartments, such as an apartment, -- be -- generally the key is used also for unlocking the door lock which it usually comes out to use a key, and exists, and is in the gate of each part in a building.
[0003]
[Problem(s) to be Solved by the Invention] However, unless it has attached to the body always anywhere since it can copy easily in being easy to lose, the key currently used such conventionally cannot deny possibility of being copied and used improperly, while a principal does not know. That is, even if release of the door lock was carried out using the key, there was a problem [be / it / a thing] depended on the copied unauthorized use of that it is what it depends on a principal, or a key of being unknown.
[0004] The technical problem of this invention is to provide [eliminate the trouble which the above-mentioned conventional thing has, do not use the key which has a possibility like before that it may be copied although the door lock prepared in the gate is unlocked, to be unable to unlock if it is not a principal, and] the limited memory space with the release approach of a gate that the release hysteresis of a door lock can be saved at a large quantity, and the release system of a gate, moreover.
[0005]
[Means for Solving the Problem] Invention which this invention solves the above-mentioned technical problem, and relates to claim 1 Are the approach of unlocking the door lock prepared in the gate, and the fingerprint data inputted into the fingerprint input section arranged to the way outside a door are detected. If it checks that collated said detected fingerprint data with the fingerprint data beforehand registered with identification code, and said detection fingerprint data have been in agreement with said registration fingerprint data It is the release approach of a gate of outputting a release signal, unlocking a door lock and saving said identification code of said registration fingerprint data which unlocked.
[0006] Invention concerning claim 2 is set to invention according to claim 1. Two or more fingerprint data as said registration fingerprint data When the amount of data is registered identifiable by little [far] identification code compared with each fingerprint data, respectively and said detection fingerprint data are in agreement with any one of said two or more of the registration fingerprint data, While outputting a release signal and unlocking a door lock, it is the release approach of a gate of saving said identification code of the one congruous registration fingerprint data concerned.
[0007] A fingerprint detection means to detect the fingerprint data which invention concerning claim 3 is a system which unlocks the door lock prepared in the gate, are arranged outside a door at a way, and are inputted into the fingerprint input section, A fingerprint authentication means to collate the fingerprint data which said fingerprint detection means detected with the fingerprint data beforehand registered with identification code, When it checks that said fingerprint authentication means of said registration fingerprint data [said detection fingerprint data and] had corresponded, It is the release system of a gate equipped with the lock control means which outputs a release signal and unlocks a door lock, and a release hysteresis storage means to save said identification code of the registration fingerprint data which said lock control means unlocked.
[0008] In invention according to claim 3, invention concerning claim 4 as registration fingerprint data which said fingerprint authentication means collates with detection fingerprint data Compared with each

fingerprint data, the amount of data has registered two or more fingerprint data identifiable by little [far] identification code, respectively. When said fingerprint authentication means checks coincidence with any one of said detection fingerprint data and said the registration fingerprint data and said lock control means unlocks a door lock,

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the release approach of the gate applied to the gate of a building, and the release system of a gate.

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PRIOR ART

[Description of the Prior Art] for unlocking the door lock at the gate of a building generally -- a single house -- be -- apartments, such as an apartment, -- be -- generally the key is used also for unlocking the door lock which it usually comes out to use a key, and exists, and is in the gate of each part in a building.

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EFFECT OF THE INVENTION

[Effect of the Invention] This invention detects the fingerprint data inputted into the fingerprint input section arranged to the way as mentioned above outside the door prepared in the gate. If it checks that collated said detected fingerprint data with the fingerprint data beforehand registered with identification code, and said detection fingerprint data have been in agreement with said registration fingerprint data Since it constituted so that a release signal might be outputted, a door lock might be unlocked and said identification code of said registration fingerprint data which unlocked might be saved The key which has a possibility like before that it may be copied although the door lock prepared in the gate is unlocked is not used. It applies to a gate where it cannot unlock at if it is not a principal, and the release hysteresis of a door lock can moreover be saved [at] at a large quantity at the limited memory space, therefore many men will unlock a door lock repeatedly on the 1st. It is effective in the ability to go back and have checked in the past, whose fingerprint data had unlocked at the specific stage.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, unless it has attached to the body always anywhere since it can copy easily in being easy to lose, the key currently used such conventionally cannot deny possibility of being copied and used improperly, while a principal does not know. That is, even if release of the door lock was carried out using the key, there was a problem [be / it / a thing] depended on the copied unauthorized use of that it is what it depends on a principal, or a key of being unknown.
[0004] The technical problem of this invention is to provide [eliminate the trouble which the above-mentioned conventional thing has, do not use the key which has a possibility like before that it may be copied although the door lock prepared in the gate is unlocked, to be unable to unlock if it is not a principal, and] the limited memory space with the release approach of a gate that the release hysteresis of a door lock can be saved at a large quantity, and the release system of a gate, moreover.

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MEANS

[Means for Solving the Problem] Invention which this invention solves the above-mentioned technical problem, and relates to claim 1 Are the approach of unlocking the door lock prepared in the gate, and the fingerprint data inputted into the fingerprint input section arranged to the way outside a door are detected. If it checks that collated said detected fingerprint data with the fingerprint data beforehand registered with identification code, and said detection fingerprint data have been in agreement with said registration fingerprint data It is the release approach of a gate of outputting a release signal, unlocking a door lock and saving said identification code of said registration fingerprint data which unlocked.
[0006] Invention concerning claim 2 is set to invention according to claim 1. Two or more fingerprint data as said registration fingerprint data When the amount of data is registered identifiable by little [far] identification code compared with each fingerprint data, respectively and said detection fingerprint data are in agreement with any one of said two or more of the registration fingerprint data, While outputting a release signal and unlocking a door lock, it is the release approach of a gate of saving said identification code of the one congruous registration fingerprint data concerned.
[0007] A fingerprint detection means to detect the fingerprint data which invention concerning claim 3 is a system which unlocks the door lock prepared in the gate, are arranged outside a door at a way, and are inputted into the fingerprint input section, A fingerprint authentication means to collate the fingerprint data which said fingerprint detection means detected with the fingerprint data beforehand registered with identification code, When it checks that said fingerprint authentication means of said registration fingerprint data [said detection fingerprint data and] had corresponded, It is the release system of a gate equipped with the lock control means which outputs a release signal and unlocks a door lock, and a release hysteresis storage means to save said identification code of the registration fingerprint data which said lock control means unlocked.
[0008] In invention according to claim 3, invention concerning claim 4 as registration fingerprint data which said fingerprint authentication means collates with detection fingerprint data Compared with each fingerprint data, the amount of data has registered two or more fingerprint data identifiable by little [far] identification code, respectively. When said fingerprint authentication means checks coincidence with any one of said detection fingerprint data and said the registration fingerprint data and said lock control means unlocks a door lock, Said release hysteresis storage means is the release system of the gate where said identification code of the one congruous registration fingerprint data concerned is saved.
[0009] In invention according to claim 3, said fingerprint detection means is attached in the outside of a door for invention concerning claim 5, and said fingerprint authentication means, said lock control means, and said release hysteresis storage means are release systems of a gate attached inside a door.
[0010]
[Embodiment of the Invention] The gestalt of implementation of this invention is explained with reference to a drawing. Drawing 1 is the block diagram showing the gestalt of 1 operation of the release system of the gate by this invention, and the release system 1 of this gate consists of an actuation unit 20 attached in the outside 12 of a door 11 established in the gate 10 of a building, a control unit 30 attached inside [13] a door 11, and a lock unit 40 equipped with the operating knob 41 inside [13] the door 11. 15 is the door handle attached in the both sides of a door 11.
[0011] Drawing 2 is the block diagram of the release system 1 of a gate, the actuation unit 20 was equipped with the fingerprint input section 21, the fingerprint detecting element (fingerprint sensor) 22, and the locking switch 23, and the control unit 30 is equipped with the fingerprint registration section 31, the fingerprint authentication section 32, the lock control section 33, the release hysteresis storage section 34, the release hysteresis retrieval section 35, and a display 36. Moreover, although not illustrated, required power is supplied to each part of the actuation unit 20, each part of a control unit 30, and the

lock unit 40 from a cell or a proper DC power supply.
[0012] As shown in drawing 3 , if the actuation unit 20 opens covering 24, the fingerprint input screen 25 of the fingerprint input section 21 will appear. And if the fingerprint detecting element (fingerprint sensor) 22 detects the fingerprint data into which were [of the fingerprint input section 21] turned on, and it was inputted when the finger was put on the fingerprint input screen 25 and it pushed on it lightly, the detected fingerprint data will be transmitted to the fingerprint authentication section 32 of a control unit 30.
[0013] Moreover, if the locking switch 23 is pushed, when a locking signal is told to the lock unit 40 and it is in a release condition by that cause, the actuation unit 20 will have the electric lock unit 40, and will be locked.
[0014] In the usual condition, although a control unit 30 is in the release mode of operation by the fingerprint data input, it is switched to registration/deletion mode of operation of fingerprint data by proper actuation. That is, if the fingerprint data will be registered into the fingerprint registration section 31 with identification code, and the identification code of arbitration will be specified, if the fingerprint data detected in the actuation unit 20 are transmitted to the fingerprint registration section 31 from the fingerprint detecting element (fingerprint sensor) 22 in the case of registration/deletion mode of operation of fingerprint data, and actuation of deletion is made, the fingerprint data corresponding to the identification code will be deleted with identification code.
[0015] Moreover, if the fingerprint data detected in the actuation unit 20 are transmitted to the fingerprint authentication section 32 from the fingerprint detecting element (fingerprint sensor) 22 when it is in the release mode of operation by the usual fingerprint data input, a control unit 30 collates the fingerprint data with the fingerprint data beforehand registered into the fingerprint registration section 31, and when [one / every] there are two or more registration fingerprint data, it will collate it in order. And the fingerprint authentication section 32 will tell a coincidence signal to the lock control section 33, and if detection fingerprint data are in agreement with registration fingerprint data (any one), thereby, it tells the lock unit 40, and the lock control section 33 will be electric and will carry out release of the release signal.
[0016] Moreover, when detection fingerprint data of a control unit 30 correspond with registration fingerprint data (any one), the fingerprint authentication section 32 tells the identification code of the congruous registration fingerprint data to the release hysteresis storage section 34, and makes it memorize it.
[0017] Here, the reason for registering identification code into the fingerprint registration section 31 with fingerprint data is because the release hysteresis of a large quantity is saved, without increasing the memory space of the release hysteresis storage section 34 in vain. That is, as for fingerprint data, generally as opposed to a thing with comparatively much amount of data, proper identification codes, such as a number (decimal sign), have little amount of data far compared with fingerprint data. therefore -- for example, the case where register ten kinds of fingerprint data, without using identification code, and all of 100 times and 1000 times of release hysteresis are saved by fingerprint data -- the memory space of the release hysteresis storage section 34 -- 10 times of the memory space of the fingerprint registration section 31, and 100 times -- being needed .
[0018] On the other hand, there is little memory space of the release hysteresis storage section 34 required to save all of 100 times and 1000 times of release hysteresis by identification code although the memory space of the fingerprint registration section 31 must be slightly increased in order to register ten kinds of fingerprint data with the identification code much compared with the memory space of the fingerprint registration section 31, and it ends. Therefore, even if it uses the thing of the memory space restricted as the release hysteresis storage section 34, it is possible to save the release hysteresis of the large quantity which goes up to 100 times and 1000 times.
[0019] And since the identification code memorized in the release hysteresis storage section 34 is displayed on a display 36 by searching by the release hysteresis retrieval section 35, by specifying a stage and searching by the release hysteresis retrieval section 35, having unlocked at the specific stage could go back whose fingerprint data it was in the past, and it can be checked. Therefore, it is suitable as a release system applied to the gate 10 where many men will unlock a door lock repeatedly on the 1st.
[0020] Furthermore, the lock unit 40 can be locked / unlocked now by turning an operating knob 41 from the inside 13 of a door 11.
[0021] Next, an operation of the gestalt of the above-mentioned operation is explained using the flow chart shown in drawing 4 .
[0022] If the covering 24 of the actuation unit 20 is opened, a finger is first put on the fingerprint input screen 25 and fingerprint data are inputted when it is in the outside 12 of a door 11 and unlocks a door lock, the fingerprint detecting element (fingerprint sensor) 22 will detect the fingerprint data inputted into the fingerprint input section 21 (step S1).
[0023] Then, the detected fingerprint data are transmitted to the fingerprint authentication section 32 of a

control unit 30 from the fingerprint detecting element (fingerprint sensor) 22, and the fingerprint authentication section 32 collates with the fingerprint data which have registered the fingerprint data into the fingerprint registration section 31 beforehand (step S2).

[0024] If detection fingerprint data are in agreement with registration fingerprint data (any one) (YES of step S3), from the lock control section 33, in response to a release signal, the lock unit 40 will be electric and will carry out release of the door lock (step S4). It is desirable to tell to have unlocked by sounding at this time, for example, a proper audible tone.

[0025] On the other hand, when detection fingerprint data are not in agreement with registration fingerprint data, fingerprint data are made to reinput to (NO of step S3), and a predetermined number (for example, 3 times) (step S5). It is desirable to tell what fingerprint data should be reinputted for by sounding at this time, for example, a proper alarm audible tone.

[0026] Moreover, when the lock unit 40 is electric and carries out release of the door lock (step S4), the fingerprint authentication section 32 makes the release hysteresis storage section 34 tell and memorize the identification code of congruous registration fingerprint data simultaneously (step S6). Therefore, by specifying a stage and searching the identification code memorized in the release hysteresis storage section 34 by the release hysteresis retrieval section 35, in the past, it can go back and can check whose fingerprint data have unlocked at the specific stage. Therefore, it is suitable for the gate 10 where many men will unlock a door lock repeatedly on the 1st.

[0027] In addition, although the gestalt of the above-mentioned operation explained for the door 11 prepared in the gate 10 of a building, it is also possible to be aimed at the door which does not limit to this and was prepared in the gate of each part in a building, or the similar structure.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the gestalt of 1 operation of the release system of a gate, and the block diagram which looked at (a) from the outside of a door, the block diagram which looked at (b) from the end face of a door, and (c) are the block diagrams seen from the inside of a door.
[Drawing 2] It is the block diagram showing the gestalt of 1 operation of the release system of a gate.
[Drawing 3] It is the strabism explanatory view of an actuation unit.
[Drawing 4] It is the flow chart which shows actuation of the thing of drawing 2 .
[Description of Notations]
1 Release System of Gate
10 Gate of Building
11 Door
12 Outside
13 Inside
15 Door Handle
20 Actuation Unit
21 Fingerprint Input Section
22 Fingerprint Detecting Element (Fingerprint Sensor)
23 Locking Switch
24 Covering
25 Fingerprint Input Screen
30 Control Unit
31 Fingerprint Registration Section
32 Fingerprint Authentication Section
33 Lock Control Section
34 Release Hysteresis Storage Section
35 Release Hysteresis Retrieval Section
36 Display
40 Lock Unit
41 Operating Knob

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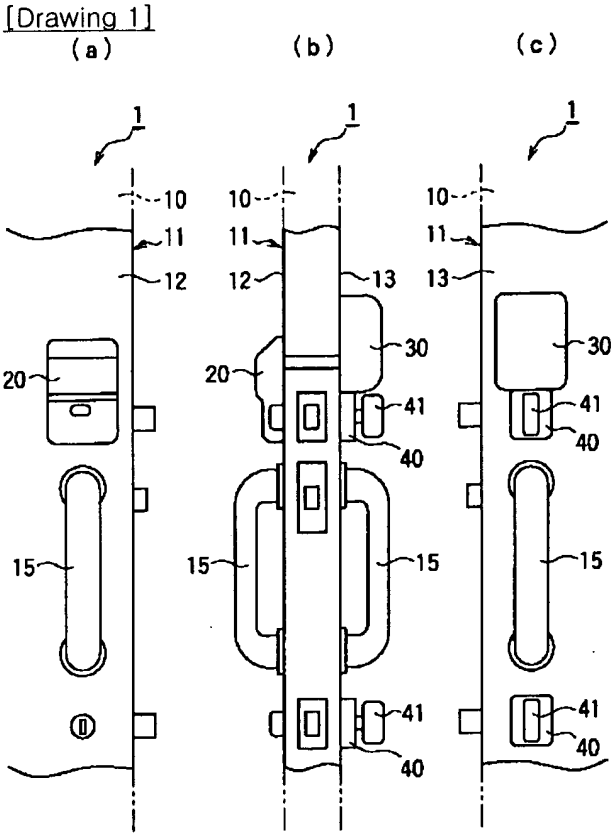
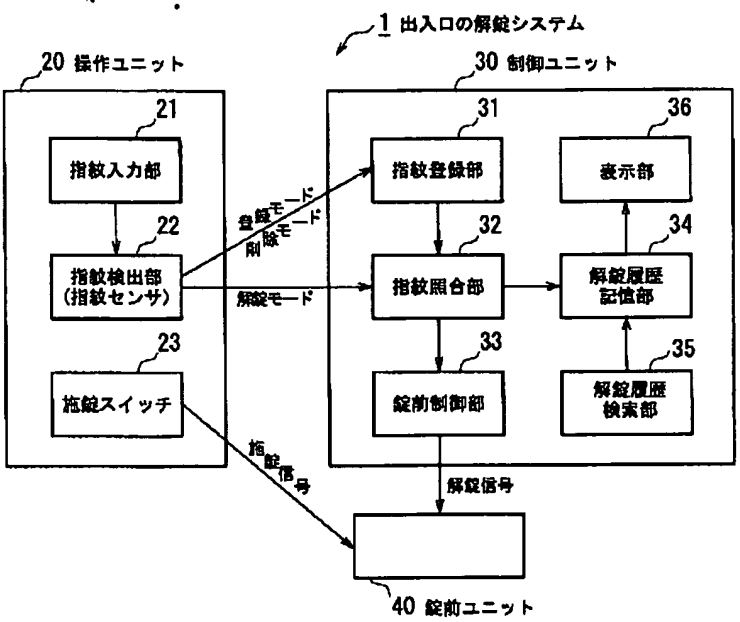
DRAWINGS

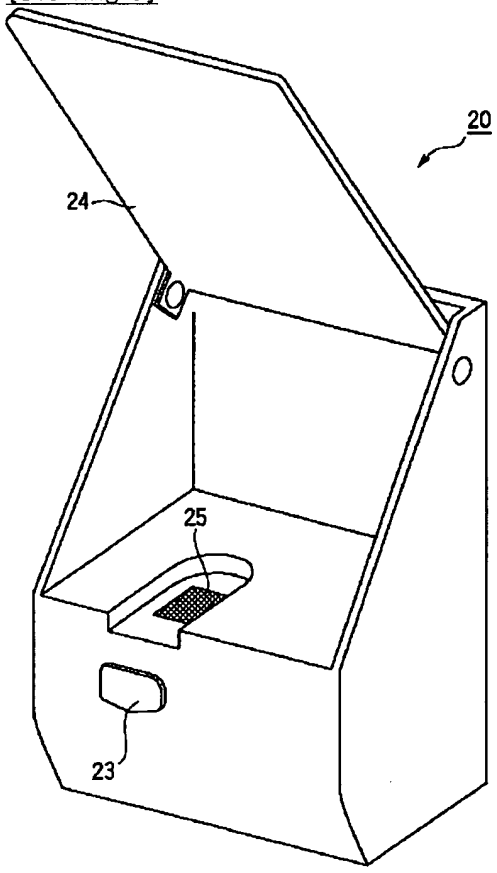
[Drawing 1]



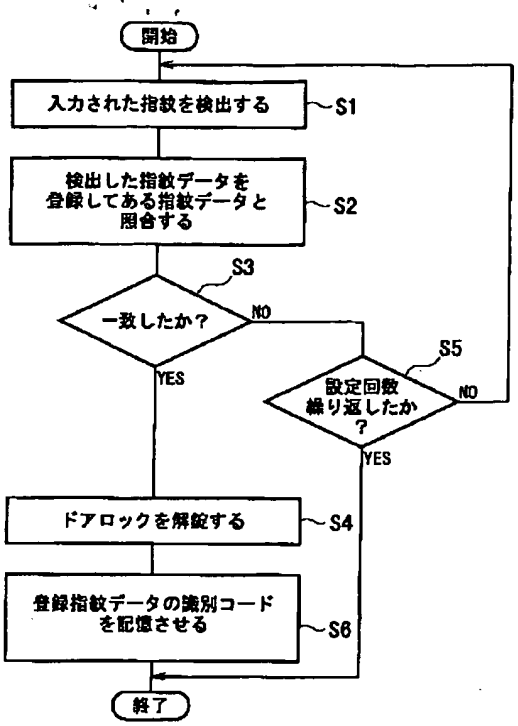
[Drawing 2]



[Drawing 3]



[Drawing 4]



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